APPENDIX B

(Clean Copy of All Pending Claims 2-4, 12-14, 24-27, 53, 57-60)

2. The method according to claim 57, wherein the reactive halide composition comprises XeF_2.

3. The method according to claim 57, wherein the reactive halide composition is selected from the group consisting of SF_6, SiF_4, and Si_2F_6.

4. The method according to claim 57, wherein the reactive halide composition is selected from the group consisting of SiF_2 and SiF_3 radicals.

12. The method according to claim 57, wherein the gas-phase reactive halide composition is selected from the group consisting of SiF_2 and SiF_3 radicals and the reactive halide composition is generated by reaction of XeF_2 with silicon.

13. The method according to claim 57, wherein the gas-phase reactive halide composition is selected from the group consisting of SiF_2 and SiF_3 radicals and the reactive halide composition is generated by passing SiF_4 through an energetic dissociation source.

14. The method according to claim 13, wherein the energetic dissociation source is selected from the group consisting of a plasma source, an ion source, an ultra violet source and a laser source.

24. The method according to claim 57, wherein the noble metal residue comprises iridium, and the gas-phase reactive halide composition comprises XeF_2 and at least one halide

species selected from the group consisting of SF_6, SiF_4, Si_2F_6, SiF_2 radicals and SiF_3 radicals, and wherein the microelectronic device structure is further contacted with a cleaning enhancement agent.

25. The method according to claim 24, wherein the cleaning enhancement agent is selected from the group consisting of Lewis-base and electron back-bonding species.

26. The method according to claim 24, wherein the cleaning enhancement agent is selected from the group consisting of carbon monoxide, trifluorophosphine, and trialkylphosphines.

27. The method according to claim 24 wherein the cleaning enhancement agent comprises an agent for enhancing volatility of iridium fluoride species formed by said contacting of the microelectronic device structure with the gas-phase reactive halide composition.

53. A method for removing a noble metal residue comprising iridium, from a microelectronic device structure disposed in a chamber, the method comprising evacuating the chamber, filling the chamber with a cleaning gas comprising XeF_2 and one or more radicals selected from the group consisting of SiF_2 and SiF_3, and retaining the cleaning gas in the chamber to react with the residue, to effect the removal of the noble metal residue from the microelectronic device structure.

57. A method for removing from a microelectronic device structure a noble metal residue including at least one metal selected from the group consisting of platinum, palladium, iridium and rhodium, the method comprising contacting the microelectronic device structure with a dry etching agent consisting essentially of (i) a gas-phase reactive

halide composition and (ii) optionally, an agent for enhancing volatility of metal fluoride species formed by said contacting of the microelectronic device structure with the gas-phase reactive halide composition (i), to remove the residue, with the proviso that when the dry etching agent is XeF_2 or a sulfur fluoride species, said noble metal residue includes at least one metal selected from the group consisting of palladium, iridium and rhodium.

58. A method for removing from a microelectronic device structure, a noble metal residue comprising iridium said method comprising, contacting the microelectronic device structure with a gas-phase reactive halide composition comprising XeF_2 and at least one cleaning enhancement agent selected from the group consisting of carbon monoxide, trifluorophosphine, and trialkylphosphines, to form at least one iridium halide species.

59. The method according to claim 57, wherein said noble metal residue includes at least one metal selected from the group consisting of palladium, iridium and rhodium.

60. The method according to claim 57, wherein said dry etching agent includes said agent (ii).

61. A method of etching iridium, comprising contacting said iridium with XeF_2.